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Risk Cause Analysis on E-Procurement Bidding

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ABSTRACT

Purpose: The current procurement of goods and services refers to the Electronic Procurement Service (E-Procurement) system in accordance with Presidential Regulation No.16 of 2018, however in its implementation the contractors still need adjustments. One of them is the contractor involved in the case study of this research which has failed in several tenders. This can create risks associated with value and profitability of the company. This study aims to cover this gap by knowing the risk factors for failure, level and the form of handling carried out by distributing questionnaires to the related contractors.

***Design/methodology/approach*:** Data analysis was performed using statistical software and the value was mapped using the Risk Relative Importance Index (RRI).

***Findings*:** The result show that the capacity of the bid files to upload is too large and there is no supplier support, are in moderate risk levels with scale respectively of 8,836 and 7,407. Problematic internet signal factors and incomplete design maturity levels are in high risk levels with a scale of 11.868 and 12.586. Meanwhile, the extreme risk level, namely the price cannot compete with other participants and the very limited time for calculating the tender, on a scale of 12,586 and 15,339 are factors that need attention.

Originality/value: This paper is original.

Paper type: Research Paper

Keyword: Bidding, Contraktor, E-Procurement, Risk

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I. INTRODUCTION

The Auction of Goods and Services Procurement has used the Electronic Procurement Service (E-Procurement) system especially on projects carried out by the Government, as quoted in Presidential Regulation No. 16 of 2018 Chapter X Article 69 section (1) "The Procurement of Goods/Services is carried out electronically using an information system consisting of an Electronic Procurement System (LPSE) and a supporting system".

Dyah, Komara, and Djuniati (2015) stated that the implementation of goods / services electronically will increase transparency, improve the level of efficiency of the procurement process, support the monitoring process, audit and meet the need for real-time access to information in order to realize clean and good government in the procurement of government goods / services so that it will be effective to encourage the creation of healthy competition between businesses.

In the implementation there are risks that will occur. The risks that will be faced by the bidders will certainly affect the performance of the company that will have an impact on the implementation of the project in the future. Matters related to the promptness to face the risk certainly refer to the auction documents provided. Where it must be studied in full and carefully so that bidders can succeed in participating in E-Procurement

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auctions and can anticipate the risks that will occur. It is not uncommon for failures to occur due to a lack of studying documents containing the rules set by the auction committee.

In the implementation of E-Procurement tender, pt. contractor. ABC experienced several failures, one of which was in the Electronic Procurement Services (LPSE) unit at the Ministry X. Failures occurred in pt contractors. Abc felt it needed to be evaluated. This makes researchers need to review the risks of such failures, because there are several factors that will later impact the value and profitability of the company.

The purpose of this study is to determine the dominant factor, the level of risk and precautions taken to minimize the failure of tenders / auctions. The Auction of Goods and Services Procurement has used the Electronic Procurement Service (E-Procurement) system especially on projects carried out by the Government, as quoted in Presidential Regulation No. 16 of 2018 Chapter X Article 69 section (1) "The Procurement of Goods/Services is carried out electronically using an information system consisting of an Electronic Procurement System (SPSE) and a supporting system".

II. LITERATURE REVIEW

A. Procurement of Goods/Services

Procurement of Goods /Services is one of the stages of the project cycle required by government agencies whose process starts from planning needs until the completion of all activities to obtain goods and services between two parties in accordance with the agreement or contract (Halim Radianto et al. 2020). According to Presidential Regulation No. 16 of 2018 states that Procurement of Government Goods/Services is an activity to obtain goods/services by the Ministry/Institutions/Work Units of Regional Devices/Other Institutions whose process starts from planning needs until the completion of all activities to obtain goods and services, using the State Budget (APBN) and/or the Regional Budget (APBD).

B. E-Procurement

Arsana (2016) E-procurement is the process of procurement of government goods / services carried out using information technology and electronic transactions in accordance with the provisions of the legislation. Furthermore (Putu Resti Mega Artantri et al. 2016) suggests that E-procurement is a system, integrated between the database of communication systems throughout or part of the process of purchasing goods or services (Yanto and Adrison 2020). E-procurement technology provides a mechanism of supervision and procurement for alleged irregularities in a procurement process. Transparency and openness of the procurement process will certainly facilitate the supervision process. All elements of society, especially non-governmental institutions are expected to play an active role in supervising the procurement process.

C. Risk Management

Saptari and Mawardi (2017) in Rizkiyanto (2018) stated that risk management is an approach taken to risk to understand, identify, and evaluate the risks of a project. PMBOK Guide 5th Edition defines project risk management as a systematic process and identification, response analysis and project risk control.

Risk management is implemented to reduce, avoid, accommodate one risk through a number of sequential activities namely:

1. Identification of risks, identify what risks may occur, apply initial screening to risk events and potential risk status and develop into prelimenary risk status,
2. Risk analysis, analyze or measure possible risks to determine which risk priorities should be completed first and the methods used to complete or reduce them.
3. Risk control, after the above two steps are implemented, the next step is to control the risk where there are two basic approaches in risk control, namely risk control by avoiding risk, controlling losses, separating risky activities and a combination of the three ways above and risk financing.

III. METHODS

Data that has been obtained through literature studies and processing questionnaire variables based on previous research, then analyzed using statistical techniques using SPSS. This is because SPSS is an application program most widely used for statistical analysis in social sciences.

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A. Non-Parametric Analysis

Non-Parametric Analysts in this study used homogeneity tests. Homogeneity test is used to determine the difference in level of understanding based on existing respondent data. The differences are divided into respondents' backgrounds which include work experience, position, and recent education. The use of Homogeneity test using Kruskal-Wallis H (free sample K test) calculation used in more than 2 categories.

The guidelines used to accept or reject if the proposed zero hypothesis (Ho) are as follows:

1. Ho is accepted if the p-value in the column asymp. Sig > level of significant (α) of 0.05 and chi square value < of X20.05(df).
2. Ho is rejected if the p-value in the column Asymp. Sig < level of significant (α) of 0.05 and chi square value > of X20.05 (df).

B. Validity Test

Test validity to determine the feasibility of question items in the list of questions on predefined variables. The formula for calculating product moment correlation is as follows:

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{\left\{N\sum X^2 - (\sum X)^2\right\}\left\{N\sum Y^2 - (\sum Y)^2\right\}}}$$

Where:

R = product moment correlation coefficient
X = score per question/item
Y = total score
N = number of respondent

The basis of decision making in the validity test are:

1) If the rhitung value > rtabel, then the question item or statement in the questionnaire has a significant correlation to the total score (meaning the item of the questionnaire is declared valid).
2) If the rhitung value < rtabel, then the question item or statement in the questionnaire does not have a significant correlation to the total score (meaning the item of the questionnaire is declared invalid).

C. Reliability Test

Reliability test aims to determine the level of data reliability produced by an instrument to ensure the consistency of research instruments in the same concept. An instrument is said to be realibel if the answer to the map is consistent over time (Basrie, Homsiah, Abdillah Willy 2015). In this study using a tool in the form of SPSS (Statistical Product for Service Solition), a technique used to measure the reliability of dangan using cronbach alpha that is a construct or variable will be said to be realibel if the cronbach alpha has a value greater than 0.60 and vice versa is said to be not reliable if the cronbach alpha is less than 0.60 (Basrie, Homsiah, Abdillah Willy 2015).

D. Descriptive Statistical Analysis

Descriptive statistics is a method of researching a group of people, an object, a set of conditions, a thought system or a class of events at a current time (Rizkiyanto 2018). The purpose of descriptive analysis is to create a systematic, factual and accurate description of the facts examined in the field. Descriptive analysis using SPSS will be obtained an overview of the factors of electronic tender failure (e-procurement) with output in the form of min, max, mean, standard deviation, and others.

E. Risk Level Analysis

Risk level analysis uses a risk matrix with probability and impact parimeters to determine the level of risk that will occur on an indicator where it can be structured on a priority scale. This matrix is in the form of a table that determines which of the combination of probability of impact and the result of such impact in the classification of high risk (red), medium risk (yellow) and low risk (green). To get a risk classification rating, use the RRI index where:

Indeks RRI = Mean Probability x Mean

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IV. DATA ANALYSI

Table 1 Wallis Kruskal Test Results Based on Recent Education

Level	Chi - Square	df	Asymp Sig.	Conclusion
Probability	5,786	3	0,123	No Different
Impact	0,938	3	0,816	No Different

Source:: SPSS, 2020

Table. 2. Probability Validity Test Results

Variabel	Corrected Item Total Correlation (r hitung)	r tabel	Description
X1	0.399	0.374	Valid
X2	0.703	0.374	Valid
X3	0.490	0.374	Valid
X4	0.454	0.374	Valid
X5	0.406	0.374	Valid
X6	0.660	0.374	Valid
X7	0.542	0.374	Valid
X8	0.487	0.374	Valid
X9	0.771	0.374	Valid
X10	0.745	0.374	Valid
X11	0.450	0.374	Valid
X12	0.537	0.374	Valid
X13	0.638	0.374	Valid
X14	0.323	0.374	No Valid
X15	0.529	0.374	Valid
X16	0.689	0.374	Valid
X17	0.660	0.374	Valid
X18	0.542	0.374	Valid
X19	0.585	0.374	Valid
X20	0.657	0.374	Valid
X21	0.611	0.374	Valid
X22	0.529	0.374	Valid
X23	0.736	0.374	Valid
X24	0.640	0.374	Valid
X25	0.493	0.374	Valid
X26	0.375	0.374	Valid
X27	0.430	0.374	Valid
X28	0.748	0.374	Valid
X29	0.468	0.374	Valid
X30	0.861	0.374	Valid
X31	0.523	0.374	Valid
X32	0.775	0.374	Valid
X33	0.712	0.374	Valid

Source:: SPSS, 2020

Table 3. Wallis Kruskal Test Results Based on Work Experience

Level	Chi - Square	df	Asymp Sig.	Conclusion
Probability	3,072	2	0,215	No Different
Impact	2,440	2	0,295	No Different

Source: SPSS, 2020

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Tabel 4. Wallis Kruskal Test Results Based on Respondent's Position

Level	Chi - Square	df	Asymp Sig.	Conclusion
Probability	3,870	4	0,424	No Different
Impact	8,919	4	0,063	No Different

Source:: SPSS, 2020

Table. 5. Impact Validity Test Results

Variabel	Corrected Item Total Correlation (r hitung)	r tabel	Description
X1	0.906	0.374	Valid
X2	0.915	0.374	Valid
X3	0.836	0.374	Valid
X4	0.868	0.374	Valid
X5	0.493	0.374	Valid
X6	0.669	0.374	Valid
X7	0.897	0.374	Valid
X8	0.842	0.374	Valid
X9	0.770	0.374	Valid
X10	0.811	0.374	Valid
X11	0.838	0.374	Valid
X12	0.821	0.374	Valid
X13	0.867	0.374	Valid
X14	0.891	0.374	Valid
X15	0.829	0.374	Valid
X16	0.553	0.374	Valid
X17	0.870	0.374	Valid
X18	0.829	0.374	Valid
X19	0.466	0.374	Valid
X20	0.876	0.374	Valid
X21	0.861	0.374	Valid
X22	0.799	0.374	Valid
X23	0.787	0.374	Valid
X24	0.784	0.374	Valid
X25	0.644	0.374	Valid
X26	0.891	0.374	Valid
X27	0.909	0.374	Valid
X28	0.783	0.374	Valid
X29	0.833	0.374	Valid
X30	0.896	0.374	Valid
X31	0.620	0.374	Valid
X32	0.775	0.374	Valid
X33	0.712	0.374	Valid

Source: SPSS, 2020

Table 6. Reliability Test Result

Tingkat	Alpha Cronbach Item	Nilai Cronbach Alpha	Kesimpulan
Probabilitas	0,940	0,60	Reliabel
Dampak	0,982	0,60	Reliabel

Source: SPSS, 2020

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Table 7. Risk Relative Importance Variable Values

No.	Variabel	Code	Dominant Results		Index Risk Relative Importance	Rank
			Probability	Impact		
Technical						
1	The method of execution of the work offered does not meet the requirements of the auction documents	X1	2.167	3.433	7.439	20
2	Incomplete organizational structure	X2	2.133	3.300	7.039	23
3	Error to understand the project siteplan because it does not carry out site visits	X3	1.867	3.133	5.849	30
4	Technical specifications less than required	X4	2.268	3.300	7.484	19
5	Bid file capacity for uploads is too large	X5	2.733	3.233	8.836	14
6	Technical proposal format submitted is difficult to understand by the jury (auction committee)	X6	2.067	2.867	5.926	28
7	Minimal understanding of tender document requirements	X7	2.100	3.300	6.930	25
Administrative						
8	Basic Capability (KD) does not match the package tendered	X8	1.800	3.330	5.994	27
9	The qualifications of project team personnel are not in accordance with the requested auction documents	X9	2.333	3.100	7.232	22
10	No supplier support	X10	2.200	3.367	7.407	21
11	Contractors do not understand sequence of activities	X11	1.700	3.233	5.496	31
12	Do not attach RKK (Construction Safety Plan) according to the format	X12	1.567	3.300	5.171	32
13	Do not attach the cost of RKK (Construction Safety Plan) at least 9 items	X13	1.800	3.267	5.881	29
Human Resources						
14	Estimator does not ask for competitive/best offer price to supplier/subcontractor	X15	2.167	3.200	6.934	24
15	Very limited tender calculation time	X16	3.900	3.933	15.339	1
16	Did not pass the prequalification stage (PQ)	X17	2.367	2.667	6.313	26
17	Lack of competent personnel in the preparation of quotes	X18	2.300	3.500	8.050	16
18	Offer documents are uploaded as they approach the deadline for bidding entry	X19	3.830	3.933	15.063	2
19	Errors in price surveys	X20	2.467	3.400	8.388	15
20	Errors in predicting price fluctuations	X21	2.400	3.267	7.841	17
External						
21	SPSE application that is experiencing trouble (interference)	X22	3.030	2.967	8.990	13
22	Problematic internet signal	X23	2.967	4.000	11.868	4
23	Failed to upload offer document	X24	2.733	4.167	11.388	6
Design or Picture						
24	Design maturity level not fully available	X25	2.900	3.667	10.634	7
25	Scope of work does not match images and specifications	X26	2.633	3.533	9.302	11
26	The boundaries of the scope of work are unclear	X27	2.600	3.667	9.534	10
Price						
27	Prices cannot compete with other participants	X28	3.200	3.933	12.586	3
28	Ability in bidding estimation is not good	X29	2.367	3.233	7.653	18
29	Arithmetic error	X30	2.533	3.867	9.795	9

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No.	Variabel	Code	Dominant Results		Index Risk	Rank
30	The unan availability of BOQ that describes the scope of work	X31	3.000	3.300	9.900	8
31	Late management decision in determining the maximum offer price	X32	3.133	3.733	11.695	5
32	Lack of communication between Engineer and Estimator so that the production tools offered do not match the price offered	X33	2.633	3.467	9.129	12

Source: Processed Authors, 2020

V. RESULT

Based on the results of questionnaires and data analysis obtained variables with risk ratings from each aspect of the risk category namely: technical aspects, administrative aspects, human resource aspects, external aspects, design or image aspects, and price aspects. So that the highest rank of each aspect will be the dominant failure risk factor that can be analyzed as follows.

Table 8. Highest Risk Rating for E-Procurement Tender Failure

No.	Variabel	Code	Dominant Results		Index Risk Relative Importance	Rank
			Probability	Impact		
Technical						
1	Bid file capacity for uploads is too large	X5	2.733	3.233	8.836	14
Administrative						
2	No supplier support	X10	2.200	3.367	7.407	21
Human Resources						
3	Very limited tender calculation time	X16	3.900	3.933	15.339	1
External						
4	Problematic internet signal	X23	2.967	4.000	11.868	4
Design or Picture						
5	Design maturity level not fully available	X25	2.900	3.667	10.634	7
Price						
6	Prices cannot compete with other participants	X28	3.200	3.933	12.586	3

Source: Processed Authors, 2020

Next the ranking results of the overall variables described in the risk mapping.

Table 9. Risk Impact

Peluang Terjadi Risiko	Dampak Risiko				
	Sangat Kecil	Kecil	Sedang	Besar	Sangat Besar
Sangat Sering		X30	X19, X28		
Sering		X18	X24, X25		
Cukup Sering			X22, X26	X23, X31	X16
Jarang			X3, X6, X8, X11, X13, X16	X1, X2, X4, X5, X7, X9, X10, X15, X19, X20, X21, X29	X27, X32
Sangat Jarang					X12, X31

Source: Processed Authors, 2020

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VI. CONCLUSION

Based on the results of analysis and process of discussion data in this study, the authors concluded that:

a. Technical Aspect Factor, X5 risk, offer file capacity for upload too large get Index Risk Relative Important (RRI) value of 8,836 with moderate risk level. Precautions are to ensure that files sent in the form of pdfs with smaller caps, reduce material brochure files that are not relevant to tenders, prepare applications to reduce data capacity. Corrective action is to compress every file uploaded, buy/download a secure, efficient and effective file reduction application.
b. Administrative Aspect Factor, X10 risk, no supplier support get Index Risk Relative Important (RRI) value of 7,407 with moderate risk level. The precautions are to create a data bank for supplier list, improve coordination between pic tender and supplier/subcontractor by increasing the quantity of coordination meetings. Corrective action is to contact the supplier at the beginning of the tender implementation, looking for other brand suppliers of equal quality.
c. Human Resources Aspect Factor, X16 risk, very limited tender calculation time get An Index Risk Relative Important (RRI) value of 15,339 with an esktrem risk level. Preventive measures are to make efficient calculation methods and train human resources to be able to work quickly, precisely and responsibly; create a recap of similar project data for coefficients and fairness value; create an administration format in accordance with the needs of tenders to minimize the shortcomings of existing administration. Corrective action is to supervise the progress of calculations; create a priority list of jobs that must be calculated in detail in order to take precedence over the completion; members of the tender team.
d. External Aspect Factor, X23 risk, problematic internet signal get Index Risk Relative Important (RRI) value of 11,868 with high risk level. Precautions are to improve supporting facilities, provide at least 2 internet providers to prevent failed uploads if one of the internet providers has problems, check the internet connection before the tender upload process. Corrective action is to provide it team during the delivery process to control the process, upload files in a place with high internet speed, provide a modem or a stable internet connection specifically for uploading tender activities.
e. Design or Image Aspect Factor, X25 risk, design maturity level is not fully available to get An Index Risk Relative Important (RRI) value of 10,634 with a high level of risk. Precautions are to request a complete design at the time of aanwijzing, coordinating and additional communication between engineering and quantity surveyors to cover the lack of maturity of available designs. Corrective action is to make design assumptions by still consulting consultant planners and owners, providing special training to the engineering team and quantity surveyor team to deal with tender conditions with no design / image available that is less / incomplete.
f. Price Aspect Factor, X28 risk, price cannot compete with other participants get An Important Risk Relative Index (RRI) value of 12,586 with extreme risk level. Precautions are to find the best price from each supplier; analyze the risks that can occur and calculate them so that the risks and margins are not too high; make up to date price bank data in accordance with the project that is running. Corrective action is to streamline internal costs that are perceived to be less in accordance with the project being carried out, reducing margins and risk figures at RABT by knowing the consequences, creating bank data.

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BIOGRAPHIES

Lily Kholida is a Lecturer in Faculty of Engineering, majoring Construction Management at Mercu Buana University, West Jakarta, Indonesia. She earned B.Tech in Construction Management and Master in Project Management from University of Indonesia. She already being a thesis supervisor for almost thirty students in different subject discuss about risk, cost, safety and health management which aligned with her research interest. She is a member of Project Management Institute (PMI) global, PMI chapter Indonesia and Indonesian Project Management Expert Association (IAMPI).

Bismar Arif is a Btech student in Civil Engineering at the Mercu Buana University. Before majoring in civil engineering, the author completed his education in engineering school in 2016 majoring in architectural engineering at a favorite school in Jakarta, namely SMKN 26 Jakarta. The author is also an employee at one of the State-Owned Enterprises, Wijaya Karya Buildings, Tbk. with responsibility of calculating the budget plan for project construction costs.